

REMARKS

Applicants thank the Examiner for acknowledging that claims 7-9 are allowed. Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claims 4, 6 and 10 are canceled. Claim 1 is being amended. This amendment changes and deletes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claims remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 1-3, 5 and 7-9 are now pending in this application.

Claim Rejections under 35 U.S.C. § 102

Claims 1, 2, 3, 5 and 10 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent Publication No. 2004/0107035 ("Tange et al."). Applicants traverse the rejection for the reasons set forth below.

Applicants rely on M.P.E.P. § 2131, entitled "Anticipation – Application of 35 U.S.C. § 102(a), (b) and (e)" which states, " a claim is anticipated only if each and every element set forth in the claim is found, either expressly or inherently described, in a single prior art reference." Applicants respectfully submit that the cited references, alone or in combination, do not describe each and every element of the claims.

As originally presented, claim 1 (*i.e.*, the claim from which claims 2, 3 and 5 depend) recites a steering control apparatus for an automotive vehicle. This steering control apparatus includes, among other possible things (*italic emphasis added*):

- a camera photographing a travel path in a traveling direction of a vehicle;
- a lateral displacement calculating circuit that calculates a lateral displacement of the vehicle with respect to the travel path according to an image of the travel path photographed by the camera;
- a differentiator that calculates a differential value of the lateral displacement;
- a vehicle speed sensor that detects a vehicle speed;

a relative yaw rate calculating section that calculates a relative yaw rate with respect to the travel path of the vehicle on the basis of the lateral displacement, the differential value of the lateral displacement, and the vehicle speed;
an actuator that provides an assistance force for the steering mechanism; and
an actuator controlling section that drivingly controls the actuator in a direction toward which the relative yaw rate is cancelled on the basis of the relative yaw rate, wherein the actuator controlling section outputs a steering torque command value to the actuator, the steering torque command value being a sum of a steering quantity in accordance with the driver's steering operation and the vehicle speed and a stability direction quantity calculated on the basis of the calculated yaw rate.

Accordingly, the claimed invention calculates a relative yaw rate (a stability direction quantity) which is derived from the lateral displacement, the differential value of the lateral displacement and the vehicle speed. The yaw rate is a variation rate of the yaw angle of the vehicle. The variation rate of the yaw angle has a close relationship to the force developed on the vehicle due to yawing. Using an actuator, force is applied to a steering mechanism based on a sum of the stability direction quantity and a steering quantity. According to the claimed invention, the steering quantity is derived from the driver's steering operation and the vehicle speed. Accordingly, the obtained stability direction quantity and the steering quantity are used as a parameter by the actuator in determining the amount of force applied to the steering mechanism. This results in extremely accurate steering control.

In contrast, Tange et al. and Matsumoto (standing alone or combined) fail to teach or suggest the steering control apparatus recited in claim 1. Page 4 of the September 25, 2006, Final Office Action acknowledges that Tange et al. does not disclose, teach or suggest “the actuator is a steering actuator.” In making the rejection, the Office Action states that Matsumoto et al. “discusses that either a steering actuator or driving torques can be used interchangeable in a lane deviation prevention system in paragraph 2.” However, neither Tange et al. or Matsumoto et al., alone or in combination disclose a steering control apparatus “wherein the actuator controlling section outputs a steering torque command value to the actuator, the steering torque command value being a sum of a steering quantity in accordance with the driver's steering operation and the vehicle speed and a stability direction quantity calculated on the basis of the calculated yaw rate” as claimed in claim 1.

Paragraph 2 of Matsumoto et al., which is found in the background section, simply states that “lane deviation is prevented by producing a yaw moment or a yawing moment by controlling the steering actuator depending on a host vehicle’s lateral displacement.” M.P.E.P. § 2131 states that “[t]he identical invention must be shown in as complete detail as is contained in the claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236 (Fed. Cir. 1989). Here, Matsumoto et al. discloses an actuator that produces a yaw moment acting on the host vehicle. (*See* Claim 1.) However, neither of the cited references disclose in any detail a steering control apparatus wherein “wherein the actuator controlling section outputs a steering torque command value to the actuator, the steering torque command value being a sum of a steering quantity in accordance with the driver’s steering operation and the vehicle speed and a stability direction quantity calculated on the basis of the calculated yaw rate” as claimed in claim 1.

Accordingly, Tange et al. and Matsumoto et al. fail to teach or suggest at least the above-emphasized limitations of claim 1. Thus, Applicants respectfully request that the rejection be withdrawn and amended claim 1 be allowed. Claims 2, 3 and 5 depend from amended claim 1 and are allowable for the reasons set forth above without regard for further patentable limitation recited therein. Therefore, Applicants respectfully request that the rejection be withdrawn and claims 2, 3 and 5 be allowed.

Conclusion

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to

charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petitions\ for such extension under 37 C.F.R. § 1.136 and authorize payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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